

WHAT IS CLAIMED IS:

- 1        1. In a clutch, a combination comprising:
  - 2            a clutch disc rotatable about a predetermined axis
  - 3            and including at least one input section having friction
  - 4            linings and an output section coaxial with and in torque-
  - 5            transmitting engagement with said at least one input sec-
  - 6            tion;
  - 7            a dynamic damper having a mass; and
  - 8            means for transmitting torque between said mass
  - 9            and said clutch disc, including a rotary oscillation
  - 10          damper having energy storing means and a slip clutch in
  - 11          series with said oscillation damper.

1           2. The combination of claim 1, wherein the clutch  
2 is a friction clutch in a power train of a motor vehicle.

1           3. The combination of claim 1, wherein said  
2 dynamic damper forms part of said clutch disc.

1           4. The combination of claim 1, wherein said output  
2 section of said clutch disc shares at least a majority  
3 of rotary movements of said at least one input section  
4 about said axis.

1           5. The combination of claim 1, wherein the trans-  
2 mission of torque from said clutch disc to said mass  
3 takes place by way of said slip clutch and thereupon by  
4 way of said oscillation damper.

1           6. The combination of claim 1, wherein said output  
2 section of said clutch disc includes a hub.

1           7. The combination of claim 6, wherein said dy-  
2 namic damper is mounted on said hub.

1           8. The combination of claim 6, wherein said at  
2 least one input section of said clutch disc comprises  
3 a flange arranged to share rotary movements of said hub  
4 about said axis.

1           9. The combination of claim 8, wherein said flange  
2 is of one piece with said hub.

1           10. The combination of claim 8, wherein said  
2 flange extends substantially radially of said axis.

1           11. The combination of claim 8, wherein said  
2 flange has a first side adjacent said dynamic damper and  
3 a second side facing away from said dynamic damper.

1           12. The combination of claim 1, wherein said  
2 dynamic damper comprises a portion which is in torque-  
3 transmitting engagement with said mass at least by way  
4 of said energy storing means.

1           13. The combination of claim 12, wherein said  
2 portion of said dynamic damper is in torque-transmitting  
3 engagement with at least one of said input and output  
4 sections of said clutch disc by way of said slip clutch.

1           14. The combination of claim 1, wherein said  
2 energy storing means comprises at least one coil spring.

1           15. The combination of claim 1, further comprising  
2 a pressure plate coaxial with said clutch disc and  
3 movable in the direction of said axis toward and away  
4 from frictional engagement with the friction linings of  
5 said at least one input section of said clutch disc.

1           16. The combination of claim 15, further  
2 comprising a motor-driven flywheel coaxial with said  
3 clutch disc and engageable by said friction linings to  
4 rotate said clutch disc in response to frictional  
5 engagement of said friction linings by said pressure  
6 plate.

1           17. A power train for use in a motor vehicle, com-  
2 prising:

3           a prime mover having a rotary output element;  
4           a transmission having a rotary input element co-  
5 axial with said output element; and  
6           an engageable and disengageable friction clutch  
7 including:

8           a flywheel coaxial with and arranged to be  
9 driven by said output element,

10          a clutch disc coaxial with and arranged to  
11 rotate with said output element in the engaged con-  
12 dition of said clutch, said clutch disc including  
13 at least one input section having friction linings  
14 engaged by and receiving torque from said flywheel  
15 in the engaged condition of the clutch and said  
16 clutch disc further including an output section  
17 coaxial with and in torque transmitting engagement  
18 with said at least one input section,

19          a dynamic damper having a mass, and  
20          means for transmitting torque between said  
21 mass and said clutch disc, said torque transmitting  
22 means including a rotary oscillation damper having  
23 energy storing means and said torque transmitting  
24 means further including a slip clutch in series  
25 with said oscillation damper.

1           18. The power train of claim 17, wherein said fly-  
2         wheel includes a first mass arranged to receive torque  
3         from the output element of the prime mover, a second mass  
4         adjacent said friction linings, and a resilient damper  
5         between said first and second masses.

1           19. The power train of claim 17, wherein said  
2         dynamic damper surrounds one of said input and output  
3         sections and is adjacent the other of said sections, said  
4         friction clutch further comprising a pressure plate  
5         surrounding said dynamic damper.

1           20. The power train of claim 17, wherein at least  
2         one of said sections is movable relative to the other  
3         of said sections in at least one of the directions  
4         including axially and radially of the input element of  
5         said transmission.